FEBRUARY
1969
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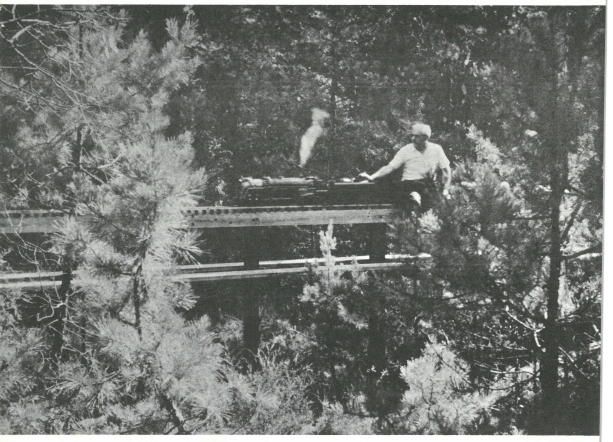
Live Steam

THE MONTHLY MAGAZINE FOR ALL LIVE STEAMERS AND LARGE-SCALE MODEL RAILROADERS



Fall Meet in Charlotte

Three-Phase Power For Your Shop

Live Steam
magazine

FEBRUARY 1969 VOL. 3 NO. 2

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COVER PHOTO

Dark green Southern Pines form a frame for Orice Ritch and his 3½" scale Hudson in the Southern's green and gold color scheme as he thunders across a high trestle on the Southeastern Live Steamer's track in Charlotte, North Carolina.

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Southeastern Live Steamers hold

Fall Meet in

Story and Photos by Thomas C. Phillips

The Annual Fall Meet of the Southeastern Live Steamers was held on October 19th and 20th on the Club track adjacent to the lovely home of charter member, Bobby Thompson. The beautiful country-side in northeast Charlotte provides a setting that is hard to equal.

In spite of rain on Saturday, the event was enjoyed by all those attending. Since they are past masters of providing an enjoyable program, Bobby Thompson and Orice Ritch rounded out a program of rail movies and slides, visits to various members' shops during the day to see what was under construction, as well as the enjoyable food served at Bobby Thompson's home.

Visitors inspected the start of new construction of a spur which will extend from the mainline to the basement of Bobby Thompson's home, a distance of several hundred feet. When this spur is completed, it will save valuable hours of loading and unloading the trailer which is now used to transport locomotives to the unloading table.

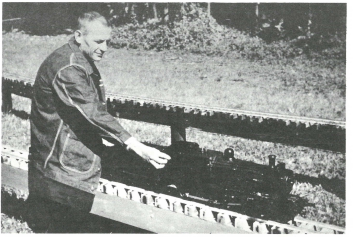
Six ¾" locomotives were operated during the Fall Meet: two beautiful Hudsons painted in the Southern's green and gold belonging to Bobby Thompson and Orice Ritch of Charlotte; a meticulate British Mogul owned by the distinguished New Englander, Carl Purinton of Boxford, Massachusetts; "Doc" Kester's trim 4–6–4 from Charlotte making its first run; Stanley Wylie's 4–4–2 from Charleston, S. C., and Al Butcher's 4–4–2 from Charlotte.

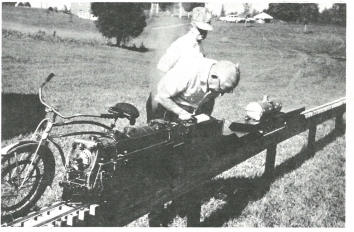
Among the out-of-town guests were several members of the newly-organized Rebel Live Steamers Association, whose Southern Southbound 4¾" track is in East Point, Georgia – a suburb of Atlanta. They included Mr. and Mrs. Sydney H. Watts, who has a 1" scale Southern PS–4 heavy Pacific under construction; Mr. and Mrs. Tom Phillips, owner of a 1" scale 4–8–4; Mr. T. R. Scott who is building a 1" scale replica of the Civil War locomotive, *The Texas*; Richard Horton, who is now building a heavy Pacific and Buddy Stewart of Atlanta who plans to build a Ten Wheeler.

Charlotte

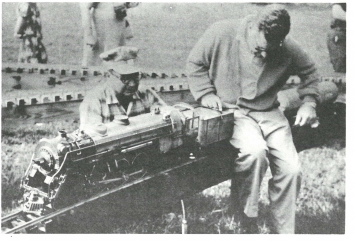
Other out-of-town guests were Mr. and Mrs. Douglas Tindall of St. Augustine, Florida, owner of a 3" scale 4–4–0 and 4–4–2; Mr. and Mrs. Allen Gracie of Orlando, Florida, who has a 4–4–2 under construction and Dr. and Mrs. John E. Griffiths of Marion, Virginia.

Everyone will be looking forward to the 1969 Spring Meet in Charlotte – the place where true Southern Hospitality reigns!





Photos (beginning at the top of this page and continuing clockwise) show T. R. Scott at the throttle of Carl Purinton's British Mogul in Charlotte; Orice Ritch making some line adjustments on his 4–6–4 while Dr. John Griffith looks on; "Doc" Kester readying his brand new Hudson for its initial run; "Mr. Live Steamer" himself, Carl Purinton, at the Southeastern Live Steamers' track; and Orice Ritch at the throttle of his ¾" 4–6–4 drifting down grade on the main line. ("Hobo" is Mrs. Tom Phillips!)



Warning issued for care in silver soldering

In the LALS *Engine Booster* for February 1969, Bill Webb points up the need for care in selecting proper materials for your silver soldering work.

"On an October day of 1965, a welder spent his time silver brazing – a normal practice for a man of his profession. He died eighty-six hours later from acute cadmium poisoning.

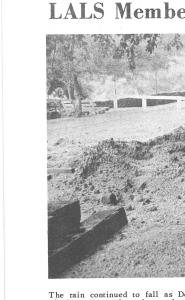
"In Utah, at about the same time, another death occurred to a worker and was attributed to his silver brazing with a cadmium bearing alloy for a period of 2½ to 3 hours. Cadmium oxide fume is insidious, you can't smell it and lethal doses need not be sufficiently irritating to cause discomfort until after the worker has absorbed sufficient quantities to be in immediate danger of his life.

"The health hazard is obviously high for both acute and chronic exposure to cadmium fumes. The chief site of toxicity is to the lungs where severe irritation occurs, resulting in acute severe pneumonia and pulmonary edema (wet lung); irreversible lung injury resulting in emphysema occurs with chronic exposure. The irritative effects of cadmium often linger after exposure has ceased.

"The treatment is avoidance of exposure, since no effective medicine is available to counteract the effects once exposure has occurred.

"Therefore, the LALS recommends only silver solder containing no cadmium be used. Also, the fumes from beryllium are just as harmful. Let's all play it safe."

LALS Members Dig Out



The rain continued to fall as Doug Alkire shot this picture of Disney Loop along the south side of the Los Angeles Live Steamers' facility on January 26th. About 250 feet of track was buried under tons of mud and is now being dug out so that operations can continue at an early date.

PERCY B. LEVITT of Millbrun, N. J., passed away on Saturday, January 4th, 1969 at the age of 79. The malignancy which caused his death had kept him from attending Live Steam functions for several months.

Percy was born in London, England, and retired from his duties in 1958 after serving 35 years as automotive engineer with Cities Service Oil Company. He is survived by his wife, a son and a daughter and six grandchildren in addition to a brother and sister in England.

"All of our members remember Percy, his witty remarks made in British accent, his maroon 4–4–2 Atlantic that ran on propane gas, and his last adventure, that of making small steam turbine generators for locomotive headlights" reports Paul Boivin in the NJLS Whistle Blast.

All who knew Percy will miss him and extend our sympathies to his family.

I send you sad tidings which may already have reached your ears. On Friday, January 31st, Gene Hackley died.

Gene suffered from heart disease which permitted him to work and follow the hobby but which prompted him to resign from the Board of Directors of the Los Angeles Live Steamers shortly after he was elected last November.

EUGENE PAULSEN HACKLEY was a native of Kansas City, Missouri. He served in the Army Air Force in WWII, where he made training films. He first worked as a photographer for the Kansas City Star before the war. Later, he worked for the Mirror in Los Angeles and is best known for his work for the Los Angeles Times for the past several years.

Gene Hackley was the Past President of the Southern California Live Steam Club and for several years was Publicity Director of the Los Angeles Live Steamers. You are well aware of his work as a photographer, author and correspondent.

Gene leaves his widow, Mary, and a daughter, Gente, a student at Whitworth College in Spokane.

Gene had been working on dies for 1½ inch bronze and stainless castings for a new 1½" 2–6–0. Some of the finished parts are accurate to .0005 after merely sand-blasting.

He generated remarkable friendship and respect among the police and firemen of Los Angeles City and County. Gene spent a lot of his time doing favors for the men in their fire- and stationhouses.

He stopped by the LALS track every Sunday be could to check the action, snap photos which be gave to the members, and monitored emergency radio frequencies all the while.

As far as the club is concerned, be is irreplacable. Gene could turn out cameramen and commentators from three local TV stations for an Annual or BLS Meet.

Gene died while doing some rainstorm-generated maintenance on his swimming pool. His funeral was attended by a host of Live Steamers and a host of police and firemen. He lived in a man's world and the crowd of mourners was uniquely almost exclusively masculine. Neighbors, a policeman, fireman, newspaperman and I served as pallbearers.

Gene Hackley was 54 years old when be died. Good men should be permitted a longer time on this earth.

Arthur W. Reiter, M.D.

Register now to attend NJLS Spring Meet in June

Due to Township Ordinance and the size of their facilities in general, the New Jersey Live Steamers find it necessary to limit attendance at their Annual Spring and Fall Meets to Live Steamers and their immediate families. To assist them in their planning, they request that all who plan to attend the Annual Spring Meet on June 27–28–29 fill out the registration form below (or a facsimilie) and mail it to them as soon as possible.

PLEASE NOTE: Township Ordinance prohibits any campers, mobile home equipment or tents to be used or parked overnight anywhere in the Township. The attendant at the NJLS gate during the Meet will admit only those who have pre-registered.

To review the reasons which make this new policy necessary, please see page 3 of the October 1968 issue of LIVE STEAM Magazine.

Larry Green, NJLS President adds, "We at NJLS sincerely hope this new policy will make our future meets even more enjoyable for our fellow Live Steamers. Don't forget to bring along any steam supplies, etc., you wish to sell or swap at our model trading post."

(Please fill out and mail to)
NEW JERSEY LIVE STEAMERS
Box 205, Liberty Corner
New Jersey 07938

NAME

ADDRESS

CITY STATE ZIP

CLUB

Other Steam Organizations

No. in party_____ Days Attending: ☐ Fri. ☐ Sat. ☐ Sun.

What Steam Equipment Do You Plan To Bring?

Brotherhood of Live Steamers Meeting in 1970

Harry L. Dixon, West Coast Secretary of the BLS has announced completion of plans for a National Meeting of the Brotherhood of Live Steamers at the facility of the Los Angeles Live Steamers on May 29–30–31, 1970. These National Meets have been held on a five-year interval and require a great amount of planning and preparation.

Announcements will be made periodically as to the details of this Meet which is still more than a year away, but the announcement will permit Live Steamers from all areas to begin making their plans to attend.

If you should have need to write about the meet, contact should be made through Joel Corbin – Secretary, Los Angeles Live Steamers, 12723 Kittridge Street, North Hollywood, California 91606. To help Joel keep his LALS correspondence separate from that pertaining to the BLS Meet, please mark "BROTHERHOOD MEET" on the front of the envelope. Don't forget to include a stamped, self-addressed envelope for his reply.

Union Pacific Centennial Celebration May 10th

At 1:47 p.m. MDT on May 10th, 1969 the same gold spike will be driven by the same maul that signaled completion of the transcontinental rails a hundred years previous as the Union Pacific Railroad celebrates the *Golden Spike Centennial* at Promontory, Utah. From May 30th to September 1st, the ceremony will be repeated daily at the same hour.

Preliminary functions are scheduled all through the early part of this year but May 3rd will begin activities for 150 railfans as the High Iron Company's *Pilgrimage to Promontory* leaves New York City behind ex-NKP 2–8–4 #759 on its way to the ceremony. At Kansas City the 759 will be relieved by one of the Union Pacific's new Centennial diesels but at Salt Lake City UP 4–8–4 #8444 will power the special train to Ogden.

Golden Spike Special trains will be operated from Los Angeles by the Orange Empire Trolley Museum and from San Francisco by the Pacific Coast Chapter of the Railway and Locomotive Historical Society to the ceremony.

The Union Pacific's 8444 will operate between Salt Lake City and Ogden on May 11–14 making one round trip each day. Tickets are $1.22 one way and $2.23 round trip and are sold on a first-come-first-serve basis. Advance ticket requests can be made to Mr. J. G. Seegmiller, District Passenger and Ticket Agent, Union Pacific Railroad, 417 South Main Street, Salt Lake City, Utah 84111. Additional information on the schedule of activities pertaining to this celebration can be obtained from the Union Pacific Department of Public Relations, 1416 Dodge Street, Omaha, Nebraska 68102.

Robert Hornsby

Finger Lakes Live Steamers hold organizational meet

Live Steamers in the central and southern areas of New York State met on January 26th at the home of James V. Wright in Pittsford, N. Y., and voted to inaugurate the Finger Lakes Live Steamers. Of 36 known to be interested in Live Steam in that part of the state, 16 attended the first meeting. A recruiting drive for members was initiated and a search for a track site begun. A directory of club members will include information about the skills and capabilities of each, as assistance to others in the group.

Election of officers was tabled but Jim Wright agreed to serve as temporary President and John Eyster volunteered to act as Secretary-Treasurer. Anyone interested is invited to contact James V. Wright, 36 Barnfield Road, Pittsford, N. Y. 14534 or John S. Eyster, 43 Nelson Street, Fairport, N. Y. 14450 for further information.

Parts and photos of Live Steam projects prompted discussion at the first meeting. Faces (l to r) show Henry Hospers, Robert Hannum, Jim Wright, John McDonald, Sanford Whitman, Edward Nolan, John Eyster and Erwin Kistner. The man at left with his back to the camera is not identified.→

Scheduled Meets

May

16 PIONEER VALLEY LIVE STEAMERS
18 Annual Spring Meet
3½" – 4¾" – 7¼"
Brenton W. Barnfather, Secy.
3 Fleetwood Drive
Sandy Hook, Conn. 06482

17 GOLDEN GATE LIVE STEAMERS
Annual Spring Meet
2½" – 3½" – 4¾" – 7½"
Gordon French, Secretary
614 18th Avenue
Menlo Park, Calif. 94025
Phone 415 – 325-4209

18 NORTHERN ILLINOIS LIVE STEAMERS
David M. Boyd's Track
3½" – 4¾"
315 Ridge Avenue
Clarendon Hills, Ill. 60514

30 LOS ANGELES LIVE STEAMERS
Annual Spring Meet
3½" – 4¾" – 7½"
Joel Corbin, Secretary
12723 Kittridge Street
North Hollywood, Calif. 91606

30 PENNSYLVANIA LIVE STEAMERS
1 Annual Spring Meet
2½" – 3½" – 4¾"
Frank H. Moore, Jr., Secy.
211 Walnut Avenue
Wayne, Pennsylvania 19087

June

7 IOWA MODEL STEAM ENGINEERS
Annual Spring Meet
3½" – 4¾" – 7½"
Pershing G. Scott, Secretary
R.F.D. 1
Marion, Iowa 52302

27 NEW JERSEY LIVE STEAMERS
Annual Spring Meet
ADVANCE REGISTRATION REQUIRED
3½" – 4¾" – 7¼"
Ralph Green, Secretary
845 Kilsyth Road
Elizabeth, N. J. 07208
Phone 201 – 353-4424

July

12 ONTARIO SUNPARLOR
13 LINES
Grand Opening Run
3½" – 4¾"
Jack Hart, Secretary
1381 Shepherd Street
Windsor, Ontario, Canada

August

3 PALATINE, LAKE ZURICH & WAUCONDA RAILROAD
2nd Anniversary Meet
4¾" gauge
Frank Saville
512 Miller
Barrington, Ill. 60010
Phone 312 – 381-3070

30 PENNSYLVANIA LIVE STEAMERS
1 Annual Fall Meet
2½" – 3½" – 4¾"
Wm. H. Scott, Secretary
R.D. 1, Box 400
Sellersville, Pa., 18960

September

6 IOWA MODEL STEAM ENGINEERS
Annual Fall Meet
Pershing G. Scott, Secretary
R.F.D. 1
Marion, Iowa 52302

13 GOLDEN GATE LIVE STEAMERS
Annual Fall Meet
2½" – 3½" – 4¾" – 7½"
Gordon French, Secretary
614 18th Avenue
Menlo Park, Calif. 94025
Phone 415 – 325-4209

19 NEW JERSEY LIVE STEAMERS
20 ERS
21 ADVANCE REGISTRATION REQUIRED
3½" – 4¾" – 7¼"
Ralph Green, Secretary
845 Kilsyth Road
Elizabeth, N. J. 07208
Phone 201 – 353-4424

October

4 LOS ANGELES LIVE STEAMERS
5 ERS
Annual Fall Meet
3½" – 4¾" – 7½"
Joel Corbin, Secretary
12723 Kittridge Street
North Hollywood, Calif. 91606

11 PIONEER VALLEY LIVE STEAMERS
12 STEAMERS
13 3½" – 4¾" – 7¼"
Brenton W. Barnfather, Secy.
3 Fleetwood Drive
Sandy Hook, Conn. 06482

Regular Run Days

GOLDEN GATE LIVE STEAMERS
Every Sunday, weather permitting
2½" – 3½" – 4¾" – 7½"
Gordon French, Secretary
614 18th Avenue
Menlo Park, Calif. 94025
Phone 415 – 325-4209

JANUL VALLEY RAILROAD
3rd Sunday each month
7½" gauge
Harry F. Haas
Route 1, Box 47A
Janul, California 92035

NEW JERSEY LIVE STEAMERS
Each Sunday May thru October
2½" – 4¾" – 7½"
Ralph Green, Secretary
845 Kilsyth Road
Elizabeth, N. J. 07208
Phone 201 – 353-4424

PIONEER VALLEY LIVE STEAMERS
2nd Sunday each month
3½" – 4¾" – 7¼"
Brenton W. Barnfather, Secretary
3 Fleetwood Drive
Sandy Hook, Conn. 06482

PENNSYLVANIA LIVE STEAMERS
May 11, June 15, July 13, Aug. 10, Sept. 14, Oct. 12
Wm. H. Scott, Secretary
R.D. 1, Box 400
Sellersville, Pa. 18960

LOSANGELES LIVE STEAMERS
1st Sunday each month
3½" – 4¾" – 7½"
Joel Corbin, Secretary
12723 Kittridge Street
North Hollywood, Calif. 01606

RIVERSIDE LIVE STEAMERS
4th Saturday-Sunday each month
Hunter Park – Iowa & Columbia Ave.
Riverside, California
Francis H. Smith, Secretary
3536 Dewey Avenue
Riverside, California 92504
Phone 688-9533 or 683-9628

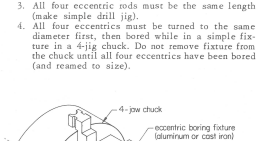
SOUTHERN CALIFORNIA LIVE STEAM CLUB
3rd Sunday each month
3½" – 4¾" – 7½"
K. G. Kepner, Secretary
2764 Maple
Rialto, California 92376

VALVE GEAR

MATCHING OF VALVE GEAR PARTS

Since a valve motion is an integrated assembly, extreme care must be taken when machining the various parts; otherwise, the events in the right cylinder will not be the same as the events in the left cylinder and this could result in a lame engine. All parts of the Stephenson Valve Gear must be matched; i.e.:

1. Links, the same radius for both (axle center to link centered fore-and-aft.
2. Eccentric rod pin holes must all be equidistant from the link slot.
3. All four eccentric rods must be the same length (make simple drill jig).
4. All four eccentrics must be turned to the same diameter first, then bored while in a simple fixture in a 4-jig chuck. Do not remove fixture from the chuck until all four eccentrics have been bored (and reamed to size).



ECCENTRIC BORING FIXTURE

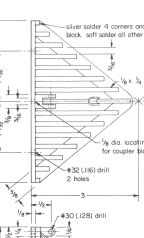
5. Both link hangers must be drilled the same dimension (make simple drill jig).
6. The length of the right and left side lift arms on the reverse shaft must be the same length and be aligned to each other.
7. The lower rocker arms must match each other as should the upper rocker arms.

SETTING UP THE STEPHENSON VALVE GEAR

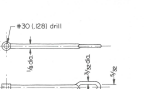
1. Design the throw of the eccentrics to give full valve travel with links in full gear. The lengths of the upper and lower rocker arms must be considered.
2. If locomotive is to operate in full gear all the time, consider allowing lead, otherwise consider no lead if engine is to be operated with variable cut-off.
3. After valve motion and valves are assembled, place reverse lever in full forward gear and then revolve the forward eccentric to move the valve. Adjust the valve positions until both valves are centered in their travel in respect to the port openings (adjust valve stem). After checking the forward eccentric throw and positioning the valves, repeat the operation with the reverse lever in full reverse. If valve positions do not agree with the reverse lever in full forward, check eccentric rod and lift lever lengths for error. Where error is found, make new parts or plug holes and redrill.
4. Set crank pin on forward dead center, reverse gear on center, then revolve ahead eccentric forward until valve starts to open. Tighten eccentric set screw temporarily. Check against back dead center and readjust valve position to equalize lead. Repeat on opposite side of the engine.
5. Set crank pin on forward dead center with reverse lever in full reverse. Revolve reverse eccentric backwards until valve starts to open. Tighten eccentric set screw temporarily. Repeat operation on opposite side of the engine. Note that with the engine on dead center (with open rods) the lead increases as the reverse lever is moved toward center and decreases as the reverse lever is moved away from center. After everything checks out, securely lock eccentric set screws permanently – two set screws at 90° to each other, not opposite at 180°.

building the RARITAN

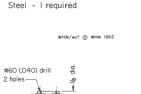
by William H. Morewood



II-1 COWCATCHER
Steel - 1 required



II-2 COUPLER
Steel - 1 required



II-3 COUPLER PIN
Steel - 1 required

WWW/act © WWW 1962

cowcatcher

To construct the Cowcatcher (II–1) begin by laying out on a paper a full-size view showing the sloping bars. Cut the 1/8" x 1/4" bars a little longer than the required lengths. Lay each bar in turn on the drawing and, with a steel scale as a guide, scribe lines where the bars will meet the top and bottom plates. Next, clamp each bar in the vise with the scribed line tight at the surface of the vise jaws. File off the excess using the vise jaws as a stop.

Clamp the two vertical side pieces to the top plate and silver solder. Line this assembly up on the bottom plate and silver solder. Silver solder also the joint at the point, the center sloping bar and the coupler block.

Prop the assembly between some firebricks so that the sloping bars will be more or less horizontal. Set them all in place evenly spaced, touch the joints with acid flux and, with a torch, flow soft solder around the joints. Wash the assembly with warm soapy water to remove the flux.

At this point it might be well to set the valve gear, but gaskets for the cylinders will be required and should be prepared first.

These gaskets may be made from brown paper grocery bags. Cut them to fit the cylinder or steam chest and pub some cylinder oil on them to soften them. Lay them on the appropriate face and put the bolt holes in by pushing a sharp lead pencil through the gasket and into the bolt-hole in the metal.

1. Next, assemble all the parts and check to see that there is no binding in the valve gear. The steam chest covers should be left off.

2. Clamp two eccentric drive collars, one on each side, to the axle by means of the setscrews. Tighten the screws only lightly so that burrs are not raised on the axle.

3. Turn the wheels slowly by hand. The valves may strike one end or the other of the steam chests.

4. Remove the pin from the valve stem joint and rotate the valve stem as needed to position the valve. When correctly positioned, the front and rear edges of the valve should uncover the front and rear steam ports an equal amount as the driving wheels are turned through one revolution.

5. Fasten the pin in place by putting a short length of copper wire through the hole and bending the ends around the pin.

6. Loosen the setscrews in all the eccentric drive collars.

7. Set the right piston on its front dead center.

8. Turn the right, outside eccentric drive collar in the direction it would move if the engine were running forward. Clamp it with one set screw in such a position that the valve will start to uncover the front port just after the piston passes front dead center.

9. Rotate the wheels in the forward direction and check to see that the valve starts to uncover the rear port just after the piston passes the rear dead center. This should be the case if the valve was properly centered in Step #4.

10. Again set the piston on front dead center.

11. Turn the right, inside, eccentric drive collar in the direction it would move if the engine were running backward. Clamp it lightly with one set-screw in such a position that the valve will start to uncover the front port just after the piston passes front dead center.

12. Turn the wheels in the reverse direction and see that the valve is correctly uncovering the rear port.

Repeat Steps #7 to #12 for the left side of the engine.

Make sure that both eccentrics turn freely between the collars.

Once the valves have been correctly set, it is necessary to lock the eccentric drive collars to the axle. This may be done as follows:

1. Chuck a 6–32 steel screw in the lathe and drill a #52 (.063) hole along its center line. This will serve as a drill bushing.

2. Place this screw in the second setscrew hole in a drive collar – the collar being held in position by a setscrew in the other hole.

3. Run a #52 (.063) drill through the drill bushing and 1/16" into the axle.

4. Remove the drill bushing and

Three-Phase Power For Your Shop

by Garold B. Kubicek

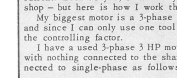
Why should you consider three-phase power for your shop? Simple! Used three-phase motors are generally cheaper to obtain, require less maintenance and are easy to wire and control.

Tremendous buys in used machine tools are often found because the tool has 3-phase motors. I recently saw an acquaintance refuse such a buy in a heavy milling machine because the vertical head had a 3-phase motor. I bought it and have made lots of chips since.

I don't intend to explain the difference between single-phase and three-phase electricity, but most people with home workshops know that their house is supplied with single-phase and that they cannot get power out of three-phase motors connected to single-phase current. Even as you, I have only single-phase into my shop – but here is how I work the trick:

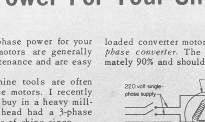
My biggest motor is a 3-phase 3 HP unit on my lathe and since I can only use one tool at a time this size is the controlling factor.

I have a used 3-phase 3 HP motor sitting on the floor with nothing connected to the shaft (no load). It is connected to single-phase as follows:



By winding a rope around the shaft, pulling on the rope to spin the shaft and turning on the single-phase switch the motor will run at the rated speed *without load*. I now buy slow speed motors – 1140 to 1200 rated RPM – because I can slide my foot across the shaft of the converter motor and get enough speed to start the tool motor. The converter motor can also be started with a very small second motor, but this starter motor should be electrically disconnected after the larger (converter) motor is running.

If we now connect a tool-mounted 3-phase motor to the running unloaded converter motor, the tool-mounted motor will operate as it should. The freely-spinning unloaded converter motor acts as a *single-phase to three-phase converter*. The conversion efficiency is approximately 90% and should be connected as follows:



Everything – supply, converter and tool-mounted motor – must have the same voltage rating. One shortcoming of this technique is that the tool-mounted motor cannot draw 3 to 4 times its rated current to start under full load because the converter acts as a partial limiter. I have not found this to be a problem.

If you run more than one tool at a time, the converter motor horsepower must be equal to or greater than the combined horsepower of all the motors to be used.

All the tool-mounted motors in your shop may be simultaneously connected to the terminal board but each must have its own control switch. All such switches must be OFF when the converter is started. The converter has a difficult time starting if it has an electrical load connected to it.

I have been using this technique for over three years and no trouble yet – in fact, I have actually been given 3-phase motors because the owner didn't know what to do with them!

If you don't like this technique you can, of course, buy the same thing commercially for about three hundred and fifty bucks for a 3 HP converter. Mine cost me $30.00 for an "as new" G. E. 3 HP motor.

Reversing 3-phase motors is easy – just exchange any two power leads.

Remember one thing – always rotate the converter shaft in the same direction when starting or you will find your tool-mounted motor rotating in the wrong direction.

insert a special setscrew. The nose of this setscrew must be turned to a diameter of .062" x 1/16" long so that it will enter the hole in the axle and lock the collar. Remove the other setscrew from the collar.

An engine with slip eccentric valve gear is reversed by being pushed a short distance in the desired direction. The friction of the eccentric straps tends to hold the eccentrics stationary until the appropriate drive collar comes around and strikes the pin in the eccentric, thus holding it in the correct relationship to its crank and driving it around.

ERRATA, REVISIONS AND ADDENDUM

June 1968 page 11, "2 – 2 Pump Housing": The ¼ drill 1/8 deep shown in the side view is on the pump centerline.

July 1968 page 6, center column, paragraphs 2 and 3 should read as follows:

2. See that there is a small center-drilled hole in each end of each axle. There should be a very slight taper on the end of each axle to facilitate starting the wheel.

3. Press a wheel with a short crankpin on one axle and one with a long crankpin on the other. Put eccentrics 1–6 and 1–12 and eccentric stops 1–13 on the axle having the long crankpin before pressing on the second wheel. These should be arranged as shown on the assembly drawing.

August 1968 page 9, "4–1 Side Frame": The 4–40 tapped hole second from the left on the top is correctly dimensioned but should have been drawn further to the right. The note should specify "4–40 tap 6 holes" in the top rather than 5.

October 1968 page 11, add this sentence to the end of the last paragraph: "Remove the spacer and cut out the excess metal on the piston rod boss."

December 1968 page 8, the last sentence of the "note" describing the piston rings should read, "Clamp in place with two sleeves having an I.D. of .805 and an O.D. of .870."

On "9–1 Piston Rod" the thread on the crosshead end of the piston rod should be 10–32.

Please also add a note stating that the Piston (9–1) and the Piston Disc (9–3) should bottom on the Spacer (9–2) rather than on each other.

mail stop

INFORMATION PLEA

I read every possible source of information on large and small locomotives and I am continually amazed that almost all authors or correspondents seem to feel that members of our hobby are incapable of understanding the slightest engineering description of how various parts of our small locomotives (or any other contrivance) works. Admittedly, there are many newcomers and not-so-newcomers but in almost every case I've known, the hobbyist *is* interested in how and *why* things work.

How often have you heard the expression, "What a grand bunch of fellows – they're so helpful!" And how often have you digested several previous articles so that you could build something for yourself not quite like the others but using the ideas incorporated?

In trying to find explanations of why things work on locomotives, *not how*, I run into a noticeable lack of information. I have been told that prototype locomotive designers and engineers were not about to write treatises on how to design because the competition might use the information. These gentlemen had to learn the hard way – by experience – since, as engineers, they couldn't find written material either.

With the passing of the steam locomotive, the gentlemen who have the experience are growing scarce, and when they are gone the design information will be gone with them. The lamentable passing of LBSC is a prime example of this situation.

I thereby say that we must convince such gentlemen that many small locomotive builders and hobbyists are very interested in *why* things work no matter how technical the discussion may become. We need this information. Once written, it is available and, if necessary, it can be digested and simplified at a later date.

I am an engineer (instrumentation) and have explained, on many occasions, scientific and engineering principles to non-technically trained people and have had little or no trouble getting the ideas across to them. I did not need advanced calculus, tensor analysis or abstract terminology. Most scientific or engineering principles pertaining to our hobby can be easily explained.

If these gentlemen are not convinced that fellow hobbyists *are* interested and that we will educate ourselves to understand their material, we will find ourselves doing nothing but repeating the same design over and over, afraid to make variations to something that works – who knows how well? We will end up with no new designs!

Do you want this? I certainly don't! Like many others, I do not have the time or cash to travel the world and personally invite such gentlemen to write . . . but the invitation must be extended. Let's see how many agree with me.

GAROLD B. KUBICEK
7965 BELLAIRE AVENUE
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CHLORIDES AND STAINLESS STEEL BOILERS

Eric Corbett's letter in LIVE STEAM (Oct. '68) was prompted by my suggestion that the use of stainless steel of the 300 series could be disastrous if he used city water for steaming. I am not an aficionado of Live Steam locomotives, but I do appreciate the labor that is involved in producing one (having seen some of Eric's work) and would hate to see a stainless steel boiler blow up because tap water was used for steaming. I would feel particularly remiss if such an accident resulted in injury or loss of life.

Mr. Alkire's response was essentially correct, but he did not understand the problem. He quoted accurately from the Metals Handbook, Vol. I, and again misconstrued the terminology. His statement that chlorine gas would evaporate immediately and pass off with the steam is true, but *chlorides*, of which Detroit water contains 6–8 ppm, can be extremely damaging to Type 300 stainless steel which has either residual or applied stress in it. Chlorides do not evaporate; they concentrate. I defy any operating boiler, fire tube or water tube, to operate in a stress-free condition. The elevated temperature of Live Steam operation will only hasten the day of reckoning.

There may be no real knowledge of what goes on in stress corrosion among Mr. Alkire's acquaintances, but he should not put this in an "art" category. We have seen stress corrosion occur in Type 304 and Type 316 stainless steels used in water containing only 2 *ppm* of chloride. Failure started because of the high stress under which these parts functioned. It is nice to be able to duplicate exact conditions to determine if stress corrosion will occur, but that is not always practical. If you want to take a chance of blowing up thousands of hours of work by using city water instead of distilled water in a stainless steel boiler, I'll stand far back and watch you. With the limited hours of service your engine sees, it may not blow up. Do you want to take that chance?

There is nothing wrong in building a miniature boiler of stainless steel. It is easy to work with, will stay clean, and even if you could work it and make it slightly magnetic (it becomes partially ferritic, not martensitic as stated in the letter), it will serve well as long as you keep chlorides away from it. If Mr. Alkire will turn to page 566 of the Metals Handbook he mentioned, he will see a horrible example of a stress-corrosion failure in city water.

By the way, I checked with Revere and found that they use Type 300 stainless steel in their pots and Type 200 in the covers. Stress corrosion is not a problem because the ware does not operate under stress. Even a pressure cooker does not operate at more than 15 psi pressure.

JACK J. BODZIN, P.E.
24031 JEROME
OAK PARK, MICHIGAN 48237

(Mr. Bodzin is Principal Engineer, Mechanical Division of the Research Department, Detroit Edison Company. He holds a Bachelor's Degree in Metalurgical Engineering from Michigan Technological University at Houghton, Michigan, and has bad 18 years experience in failure analysis, 15 of those years with pressurized tubing failures. He is a Registered Professional Engineer in the State of Michigan. Ed.)

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